



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/847,554	05/02/2001	Roland Gilbert	BAE13-US	5977

24222 7590 09/25/2003

MAINE & ASMUS
100 MAIN STREET
P O BOX 3445
NASHUA, NH 03061-3445

EXAMINER

TORRES, MARCOS L

ART UNIT	PAPER NUMBER
----------	--------------

2683

DATE MAILED: 09/25/2003

3

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/847,554

Applicant(s)

GILBERT, ROLAND

Examiner

Marcos L Torres

Art Unit

2683

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 13-20 is/are rejected.
- 7) ☒ Claim(s) 12 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. Claims 1-6, 13-15 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Izadpanah in view Barber, and further in view of Sievenpiper.

As to claims 1-4, 13 and 18-20, Izadpanah discloses an RF-actuated microelectromechanical systems (MEMS) switch module (see par. 0002), comprising: a) a MEMS switch element having at least two switching ports alternately connectable one to the other upon application of a control voltage at a control voltage port of said MEMS switch (see par. 0015); an antenna for receiving an externally-generated RF control signal having a predetermined frequency, and providing an antenna output signal representative thereof, said antenna being tuned to said predetermined frequency (see par. 0024-0025); MEMS switch element is bi-stable, whereby said at least two switching

ports are alternately connectable to and disconnected from one another upon application of said externally-generated RF control signal (see par.0015-0018). Izadpanah do not specifically disclose a tuned circuit operatively connected to said antenna and having an input port for receiving said antenna output signal and, in cooperation with said antenna, providing a circuit substantially resonant at a frequency related to said predetermined frequency of said RF control signal, said tuned circuit providing a tuned circuit output signal; and detector means operatively connected to said tuned circuit for receiving said tuned circuit output signal and generating a DC voltage representative thereof, said detector means also being operatively connected to said control voltage port of said MEMS switch; whereby said two switching ports of said MEMS switch are alternately connected to and disconnected from one another when said externally-generated RIF control signal is received at said antenna. Barber discloses a tuned circuit having an input port for receiving said antenna output signal and, in cooperation with said antenna, providing a circuit substantially resonant at a frequency related to said predetermined frequency of said RF control signal, said tuned circuit providing a tuned circuit output signal (see col. 3, lines 11-19; col. 7, lines 1-5). Sievenpiper discloses detector means for receiving a tuned circuit output signal and generating a DC voltage representative thereof, said detector means also being operatively connected to said control voltage port of a MEMS switch (see col. 5, lines 55-58). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to combine these teachings for enhanced dynamic reconfiguration capabilities.

As to claims 5, 6, 14 and 15, the limitation of the RF-actuated MEMS switch module further comprising: a capacitor operatively connected between said control voltage port and a fixed reference ground potential voltage is disclosed in the admitted prior art (see fig. 1, item 106).

4. Claims 7, 11 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Izadpanah in view of Barber, and further in view of Sievenpiper as applied to claims 1-6, 13-15 and 18-20 above, and further in view of Huang.

As to claims 7 and 16, Izadpanah, Barber and Sievenpiper disclose a RF-actuated MEMS switch module comprising: antenna, tuned circuit and MEMS switch element as shown above. They do not specifically disclose encapsulating material substantially completely surrounding said parts. Huang discloses disclose encapsulating material substantially completely (see col. 1, lines 46-52). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to add this teaching to the modified system of Izadpanah, Barber and Sievenpiper for interference reduction and increased performance.

As to claims 11 and 17, Izadpanah, Barber and Schaffner disclose everything claimed as explained above except for the RF-actuated MEMS switch module wherein said MEMS switch module is included within a multi-layer printed circuit structure. Huang discloses MEMS switch module is included within a multi-layer printed circuit structure (see col. 3, lines 21-39). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to add this teaching to the modified system of Izadpanah, Barber and Sievenpiper for increased performance.

5. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Izadpanah in view of Barber, and further in view of Sievenpiper and further in view of Huang as applied to claims 7, 11 and 16-17 above, and further in view of True.

As to claim 8, Izadpanah, Barber, Sievenpiper and Huang discloses everything claimed as explained above except for the RF-actuated MEMS switch module, wherein said encapsulating material is opaque. True discloses the RF-actuated MEMS switch module, wherein said encapsulating material is opaque (see par. 0034,0050).

Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to enhance the quality of the communication.

As to claims 9 and 10, Barber discloses the RF-actuated MEMS switch module, wherein said MEMS module is connected to a microwave antenna element. Barber do not specifically discloses if the microwave element is passive or active. However, OFFICIAL NOTICE is taken that active and passive microwave elements are a common and well known. Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to use these components to receive data efficiently.

Allowable Subject Matter

6. Claim 12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: The RF-actuated MEMS switch module, wherein externally-generated RF

Art Unit: 2683

control signal comprises an RF signal having a wavelength of approximately one millimeter, have not been found or fairly suggested in the prior art search.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Tangonan U.S. Patent US006618189B2
- b. Streeter U.S. Patent US006587021B1
- c. Sun U.S. Patent US006307452B1
- d. Nakagawa U.S. Patent US005289496A
- e. Brown U.S. Patent US006452465B1
- f. Nair U.S. Patent US006509875B1
- g. Pobanz U.S. Publication US 20030122079A1
- h. Schaffner U.S. Patent US006384797B1
- i. Wong U.S. Publication US 20020072163A1

Any response to this Office Action should be mailed to:

Commissioner of Patent and Trademarks
Washington, D.C. 20231

Or faxed to:

(703) 703-872-9314

For formal communication intended for entry, informal communication or draft communication; in the case of informal or draft communication, please label "PROPOSED" or "DRAFT"

Hand delivered responses should be brought to:

Art Unit: 2683

Crystal Park II
2121 Crystal Drive
Arlington, VA
Sixth Floor (Receptionist)


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marcos L Torres whose telephone number is 703-305-1478. The examiner can normally be reached on 8:00am-5:30pm alt. friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William G Trost can be reached on 703-305-5318. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

Marcos L Torres
Examiner
Art Unit 2683

Mlt


WILLIAM TROST
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600